

FILTER RESPONSE OPTIMIZATION FOR AN ARRAYED WAVEGUIDE GRATING DEVICE BY ADJUSTING GRATING OPTICAL PATH LENGTH AT NANOMETER SCALE

ABSTRACT OF THE DISCLOSURE

A method of optimizing a filter response of an arrayed waveguide grating. The method includes the step of measuring a respective phase error of a plurality of waveguide cores of the arrayed waveguide grating. Once the phase error is measured, a respective optical path length of the cores is adjusted in accordance with the respective phase error of the cores. Optical path length is adjusted by adjusting a respective refractive index of the cores. The optical path length can be controlled to the nanometer accuracies. The adjustment of the optical path length thereby optimizes a filter response of the arrayed waveguide grating. The respective phase error can be measured using a low coherent optical interferometer to within nanometer resolution. The respective refractive index is adjusted by using laser energy on the cores. The laser energy can be ultraviolet laser energy applied to the grating area of the cores. The adjusting of the refractive index of the cores can be used to equalize channel power of the arrayed waveguide grating. Similarly, the adjusting of the refractive index of the cores can be used to compensate for dispersion within the arrayed waveguide grating.